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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,773	08/25/2003	Akira Tanaka	81788.0255	4037
26021	7590	06/02/2005	EXAMINER	
HOGAN & HARTSON L.L.P. 500 S. GRAND AVENUE SUITE 1900 LOS ANGELES, CA 90071-2611			VANNUCCI, JAMES	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,773

Applicant(s)

TANAKA, AKIRA

Examiner

Jim Vannucci

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8-25-03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi et al.(5,544,188) in view of Nakamura et al.(5,557,700).

Claim 1, figure 2 of Takiguchi discloses a substrate(1), a clad layer of a first conduction type(2) formed on the substrate(1), an active layer(3) formed on the clad layer of the first conduction type(2) having a multiple well structure, a clad layer of a second conduction type(4) formed on the active layer, a first window region(front surface) formed near the first edge in which the band gap of the well layers is wider than the band gap of the well layers in the emission region(col. 2, lines 36-39), and a second window region(back surface) formed near the second edge in which the band gap of the well layers is wider than the band gap of the well layers in the emission region.

Takiguchi does not disclose the recited well layer composition or band gap limitations.

Alternately stacking well layers of an InGaAlP compound semiconductor and barrier layers of an InGaAlP compound semiconductor to emit light from an emission region thereof toward opposed first and second edges by current injection is obvious

given the disclosure of Nakamura(col. 8, lines 58-60; and col. 12, lines 30-33). The abstract of Nakamura further discloses a second window(entrance side) in which the band gap of the well layers is narrower than the band gap of the well layers in the first window region(exit side). The waveguide disclosed in Nakamura can be sized such that the difference in wavelength shift between the wavelength of the well layers in the second window region and the wavelength of the well layers in the emission region are from a value equal to or larger than 10 nm to a value equal to or smaller than 30 nm. The disclosure of Nakamura concerning the wavelength shift and the waveguide dimensions makes sizing the waveguide to obtain such a waveguide shift obvious.

The device disclosed in Nakamura can be operated by a control light having a lower energy(col. 4, lines 55-57).

Claim 3, the specification of Takiguchi(cols. 4-6) discloses the relationship between wavelength shift and layer dimensions. The recited wavelength shift is obvious given this disclosure.

Claim 6, table 2 of Takiguchi discloses well layers with a thickness of 5 nm or less and barrier layers of the active layer with a thickness of 5 nm or less.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the well layer composition and band gap profile disclosed in Nakamura with the laser device disclosed in Takiguchi for improved control of the device as disclosed in Nakamura.

3. Claims 2, 7-12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi in view of Nakamura as applied above, and further in view of Kuniyasu et al.(6,738,403).

Takiguchi and Nakamura do not disclose a reflective film.

Claims 2 and 11, figure 21 of Kuniyasu discloses a high-reflectance film(157; and col. 19, line 60) formed on the second edge having reflectance equal to or higher than 60% to the light from the active layer.

Claims 8-9, an active layer as recited is obvious over the disclosure of Nakamura(col. 12, lines 25-33).

Claim 10, the waveguide disclosed in Nakamura can be sized such that the difference in wavelength shift between the wavelength of the well layers in the second window region and the wavelength of the well layers in the emission region is from a value equal to or larger than 10 nm to a value equal to or smaller than 30 nm.

Claim 12, the specification of Takiguchi(cols. 4-6) discloses the relationship between wavelength shift and layer dimensions. The recited wavelength shift is obvious given this disclosure.

Claim 15, table 2 of Takiguchi discloses well layers with a thickness of 5 nm or less and barrier layers of the active layer with a thickness of 5 nm or less.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the reflective film disclosed in Kuniyasu with the device disclosed in Takiguchi and Nakamura to form a device with improved heat dissipation as disclosed in Kuniyasu(abstract).

4. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi in view of Nakamura as applied above, and further in view of Gaw et al.(4,989,050).

The window regions disclosed in Takiguchi are confined to the end surfaces of the layers.

Claim 4, figure 7 of Gaw discloses a second window region(23) that appears to have a length from a value equal to or longer than 20 gm to a value equal to or shorter than 30 Mm in the active layer along the direction from the second edge toward the first edge.

Claim 5, figure 7 of Gaw discloses a current blocking layer(12) for preventing current injection into the second window region.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the window region and current blocking layer disclosed in Gaw with the device disclosed in Takiguchi and Nakamura for a device with improved operating speed as disclosed in Gaw(col. 2, lines 13-15).

5. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi in view of Nakamura and Kuniyasu as applied above, and further in view of Gaw.

The window regions disclosed in Takiguchi are confined to the end surfaces of the layers.

Claim 13, figure 7 of Gaw discloses a second window region(23) that appears to have a length from a value equal to or longer than 20 gm to a value equal to or shorter than 30 Mm in the active layer along the direction from the second edge toward the first edge.

Claim 14, figure 7 of Gaw discloses a current blocking layer(12) for preventing current injection into the second window region.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the window region and current blocking layer disclosed in Gaw with the device disclosed in Takiguchi, Nakamura and Kuniyasu for a device with improved operating speed as disclosed in Gaw(col. 2, lines 13-15).

Information Disclosure Statement

6. The information disclosure statement (IDS) submitted on August 25, 2003 was considered by the examiner.

Correspondence

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Jim Vannucci whose phone number is (571) 272-1820.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center whose telephone number is (703) 308-0956.

Papers related to Technology Center 2800 applications only may be submitted

to Technology Center 2800 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center Fax Center number is (703) 872-9306.



James Vannucci